# Chapter 2

# OPENING AND STYLING MAPS

#### Introduction

Community 2020-HUD Community Planning Software (C2020) allows users to perform many useful, important functions, including:

- Highlight an area of any map in the U.S. to get detailed information on how HUD funds its programs within that area.
- Open a database that contains addresses of properties to plot the locations of these properties in colorful, informative maps.
- Select any point or area in the U.S. to determine income levels, demographics, and racial or gender composition of the population within any distance of these places of interest.

Before performing relatively advanced functions, you must master more elementary functions, such as opening maps from the Map Library and editing them to control the display of layers containing bodies of water, EZ/EC areas, railroads, streets, housing projects, and other points of interest.

# **Problem Statement**

You chair a nonprofit organization and just received the new GIS (Geographic Information Systems) software, C2020 Planning Software. You want to create maps highlighting geographic, economic, and demographic characteristics of your community and incorporate these maps into a presentation. How do you get started?

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# Requirements for Chapter 2

The exercises in this chapter assume you have a working familiarity with Windows 95 or Windows 3.x and that the software is already installed on your computer.

Chapter 2 Introduction

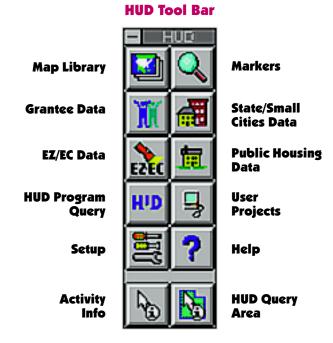
# What You Will Learn in Chapter 2

This chapter presents essential tools and concepts that will serve as the foundation for exercises in other chapters.

- In Exercise 1 you will learn how to set a home marker, zoom your map in and out, and change map views.
- In Exercise 2 you will open several maps from the Map Library and make sideby-side comparisons of different maps.
- In Exercise 3 you will learn about map layers and how to change a map by setting and manipulating the "working layer."
- In Exercise 4 you will learn how to open maps of congressional districts and enhance the maps by adding text, compasses, and symbols.

FYI

The HUD
Toolbox
command
shows and
hides the
tools shown
to the right:



# Introduction to Exercise 1: Viewing Your Community

The software makes it easy to open and create maps of your community and any other area. Easy-to-use tools allow you to style maps however you choose and to change map locations (map center and scale) to see different geographic regions in more or less detail.

#### What You Will Learn in Exercise 1

You will learn how to do the following in this exercise:

- Establish a home (default) marker. (Note: Although you are encouraged to choose any home marker using your version of the software, this manual is constructed with a focus on the Eastern region CD-ROM and will use areas in Baltimore, Maryland in many exercises.)
- Open a premade map from the Map Library.
- Use the Pan and Zoom tools to view different sections of a map at any map scale of your choosing.
- Use the Find and Set-the-Map-Scale tools to move to new map locations and scales.

# **Setting the Home Marker**

A "marker" is a map view setting of location and scale (magnification) for any map. You are required to set your home marker the first time you open the software. You can change your home marker or add additional markers at any time. The home marker may be the city, county, or State in which you work. Alternatively, the home marker may be the location that you find of particular interest for creating maps or examining HUD data. You can set your home marker based on any city, street address, ZIP Code, landmark, HUD project, congressional district, or other map feature.

#### Steps

1. When you first open C2020, you will see the following window asking you to set the home marker:



**Note:** If you are not opening the software for the first time, the Set Default Markers window will not appear automatically. In this case, you can obtain the Set Default Markers dialog box (which appears above) as follows: **click on the Markers tool** or **click on HUD, Markers**, then **click on the Defaults button** in the Marker Locations dialog box.

2. Next, click on the Set Home Marker button. The Find dialog box will appear. In this example you will use a ZIP Code in the Baltimore area as your home marker. To do this, click on the ZIP Code button and then type "21217" at the ZIP Code prompt in the lower part of the Find dialog box, as shown below:

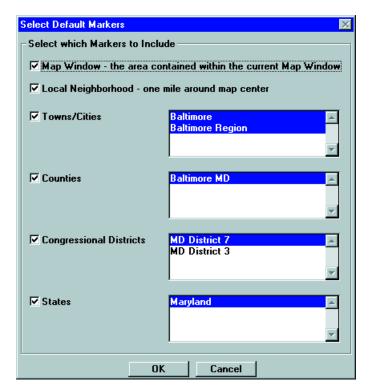


3. **Click OK**. The computer will begin to draw a map focusing on ZIP Code 21217 as the geographic region. Return to the Set Default Markers dialog box. You have the options at this point to reset the home marker to a different location or to zoom in closer to (or zoom out further from) the geographic region of ZIP Code 21217, which is displayed in the background on your

screen. Alternatively, you can click OK to accept ZIP Code 21217 as your home marker. For now, *Click OK*.



4. The Select Default Markers dialog box appears. In this window you will see other markers—the city, county, State, and congressional district—which the software has selected as default markers based on the home marker you selected. For example, based on the selection of ZIP Code 21217 as your home marker, C2020 has selected Baltimore as the city marker, Baltimore County as the county marker, and Maryland Congressional Districts 3 and 7 as the congressional district markers. When two options are available, you can select one of the markers or hold down the shift key to select both. Click OK to accept these defaults.



# Renaming a Marker

After selecting OK, you will see the C2020 startup screen. This indicates that your home and default markers have been set.

The software allows you to do many things with markers. You can add and drop markers, change the order in which the markers are listed ("Move Up" and "Move Down"), and rename markers. Rename your home marker as follows:

5. **Select the markers tool** or select HUD, Markers, from the Main Menu from the HUD toolbox. The Markers dialog box illustrated below will appear listing the markers you selected in step 4. In this dialog box, click on Home Marker Window and click on Rename, as shown below:



6. The Rename Marker dialog box is displayed. Type "My neighborhood" as the new name for the home marker window, as shown below:



#### Click OK.

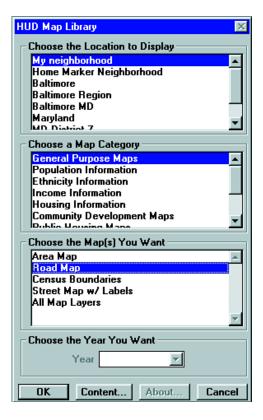
7. The new name is saved and you return to the Marker Locations dialog box. *Click on the Close button.* Your home marker (now named "My neighborhood") is now automatically saved.

# **Testing Your Marker**

Now try out the Marker that you just created. Open a map from the Map Library, which contains dozens of premade maps. Open a map of the location of the My Neighborhood marker.

Click on the Map Library button in the HUD toolbox.





#### Make the following selections to open a map:

Location: My Neighborhood

**Category: General Purpose Maps** 

Map: Road Map

Click OK.

The map you selected will appear, centered on the same geographic location and at the same scale as your My Neighborhood marker.

#### The Pan and Zoom Tools

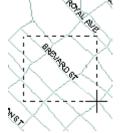
#### 8. The Pan tool:

At times you may want to see areas that are slightly outside the boundaries of a map that you have open. You could open a new map from the Map Library to see these areas, but it may be easier to see these areas by using the Pan tool.

Click on this tool now. Now click on any point in your open map and drag the map in any direction. (For example, if you want to see areas immediately north of the open map, click and drag the map slightly downward—that is, to the South.) Next, release the mouse button. C2020 will redraw the map showing a new geographic region and areas that were not previously visible.

#### 9. The **Zoom in tool:**

To view an area more closely, **click on the Zoom In button** and then **click anywhere on the map.** C2020 will redraw the map at twice the previous magnification, centered on the location where you clicked on the map. Clicking once on a map using the Zoom In tool will take you exactly twice as close to the Earth's surface as you were previously. If you wish to zoom in but want to do so at different levels of magnification, you can do this by clicking and dragging the mouse while the Zoom In tool is active. Do this now. While the **Zoom In tool** is active (**click on this tool to activate it if necessary**), **click and drag the mouse across a map area**, as shown in the illustration at left. As you drag the mouse across an area, you will see the dotted outlines of a rectangle appear. After opening a rectangle of a size and shape that you consider appropriate, **release the mouse button.** C2020 will now redraw the map, showing only the geography that was inside the rectangle you created. Note that you can zoom in more quickly if you create a smaller rectangle.



#### 10. The **Zoom Out tool:**

To see a larger geographic area on your screen, **click on the Zoom Out button** . Then **click anywhere on the map.** A new map will appear and the new geographic view will be twice as far away from the Earth's surface. The center of the new map will be the location where you clicked using your mouse. You will notice the new map view contains more geography than the previous map.

# The Find and Map Scale Tools

# **Using the Map Scale Tool**

Picture yourself looking down at your community through a windowpane from a great distance. If you zoom out, you are farther from the Earth's surface and the actual distances in your community appear smaller through the window. If you zoom in, you are closer to the Earth's surface and the actual distances between features appear greater. The map scale is an indication of the distances on the map relative to the actual distances. When you used the Zoom In and Zoom Out tools, you changed the scale of the open map each time you clicked on the map.

11. The Map Scale tool allows you to change the map scale to an exact value of your choice. Click on this tool to activate it. Next click on the down arrow in the Map Scale dialog box and change the map scale to 1:50,000. A map scale of 1:50,000 means that 1 inch on the map on your computer screen represents 50,000 actual inches. Experiment by typing in different scale values and then see how your map is redrawn. You will notice that the software will zoom in more closely to the Earth's surface as the second number in the scale ratio gets smaller. For example, you will zoom closer to the Earth by selecting a map scale of 1:5,000 than by selecting a scale of 1:20,000.

While a map is open, the software illustrates the current map scale to the lower left of the map in a small window similar to the one below:

#### Map scale: 1 Inch = 0.5623 Miles (1:35,627)

The illustration above indicates that 1 inch on the map across your computer screen represents 0.5623 miles and the same 1 inch represents 35,627 actual inches on the ground.

Also, the software indicates, in a small window to the right of the map scale window, the longitude and latitude of the point at which your cursor rests. This small window will look like the one below:

12. Using the Marker's Zoom Button and the Find tools:

C2020 offers two other ways to move quickly from one map location to another. To move quickly from one marker to another, **click on the Markers tool** . **Next click on any of the markers** (other than "My Neighborhood") in the list that appears. **Next click on Zoom.** A new map will appear at the location (marker) you just selected. **Next click on the Close button.** 

The Zoom button enables you to move quickly from one marker location to another.

If you want to move from one location covered by your CD-ROM to another and the new location is not one of your markers, you can use the **Find tool**Click on this tool now. The Find dialog box will appear. Select another location of your choice (you must abbreviate State names). Click OK. A map of the new location will appear. The new map will have the same map category type (for example, road map or area map) as the previous map.

13. Click on File, Close from the Main Menu to close the open map.

# **Wrapping Up**

You have just learned the essentials of opening maps, changing default markers, and viewing maps. You also used the Zoom, Pan, Map Scale, and Find tools to change the location and magnification of map views. In exercise 2 you will use markers again as you learn about the HUD Map Library.

# Introduction to Exercise 2: Using the HUD Map Library

C2020 provides hundreds of predesigned maps in a Map Library. Each map in the library displays a combination of geographic, income, ethnic, census, HUD project, infrastructure, or other information. Although you cannot change or delete the maps in the Map Library, you can make new maps based on these maps.

To make your own maps, you will often begin by finding the map in the Map Library that already closely matches your needs. Then you will modify it as you wish and store the revised copy in a computer directory of your choice. It is important, therefore, to be familiar with the HUD Map Library.

# What You Will Learn in Exercise 2

This exercise guides you through the process of accessing different maps from the Map Library.

Exercise 2 will help you to become familiar with:

- The variety of map types available in the Map Library.
- The variety of map themes (color and pattern themes, charts, etc.) used to communicate map information.
- The patterns in your community that become evident through side-by-side comparisons of different maps of the same location.

# Steps

In this exercise you will use the My Neighborhood marker and other markers to open and view different library maps.

1. Click on the Map Library button in the HUD toolbox, or choose HUD, Map Library, from the Main Menu.

The Map Library dialog box will appear. Note again that the home marker My Neighborhood set in exercise 1 appears in the upper pane of the Map Library dialog box.

2. Follow the instructions for each of the six maps listed on the following pages.

#### Definition

Map theme: A
graphic style for
representing map
information. Themes
include the use of
colors or hatch
marks to differentiate map areas, dot
clusters to
represent population
density, or pie
charts to show
percentage
breakdowns by
ethnicity or income.

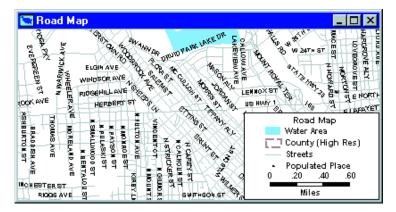
To open the first map, choose:

Location: My Neighborhood

Category: General Purpose Maps

Map: Road Map

Click OK



The map shows labeled streets, county lines, and bodies of water in the My Neighborhood marker area.

To open the second map, choose:

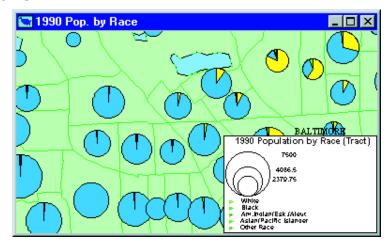
Location: My Neighborhood

• Category: Ethnicity Information

Map: Population by Race (Chart)

Year: 1990

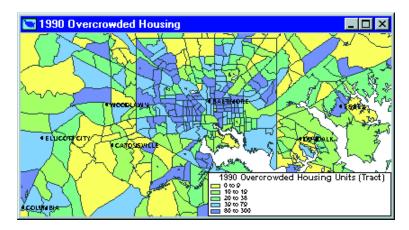
Click OK



The map shows the population of each census tract of My Neighborhood using colored pie charts. Proportions of the population in each census tract, by race, are shown as pie wedges.

To open the third map, choose:

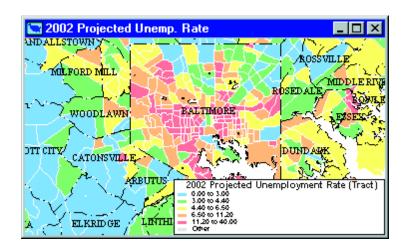
- Location: Baltimore (City Marker)
- Category: Housing Information
- Map: Overcrowded Housing
- Click OK



The map shows different colors for different census tracts based on different levels of overcrowded housing.

To open the fourth map, choose:

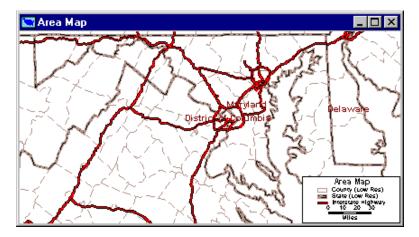
- Location: Baltimore, MD (Marker—Baltimore County)
- Category: Income Information
- Map: Unemployment Rate
- Year: 2002
- Click OK



The map shows projected unemployment rates by census tract for the year 2002.

To open the fifth map, choose:

- Location: Choose the State Marker (Maryland)
- Category: General Purpose Maps
- Map: Area Map
- Click OK



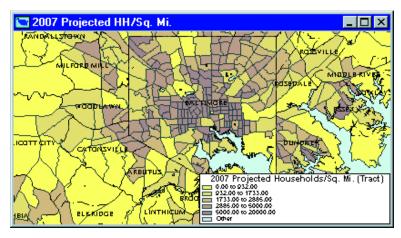
The map shows the entire State, its outlines, and outlines of counties and highways.

To open the sixth map, choose:

- Location: Other Location
- Category: Population Information
- Map: Households/Sq. Mi.
- Year: 2007
- Click OK

When you select the Other Location marker in the Map Library, C2020 will present the Find dialog box and ask you which location you would like to view. The Other Location option of the Map Library allows you to view any area in the region, freeing you from having to choose a preset marker.

To use the Find dialog box, first select the type of jurisdiction you want to view from the top section of the dialog box. The bottom half of the dialog box will reflect your selection. Click on each field and enter the requested information. For this map, select any city in the Eastern region (or the region you are working with). Type the State abbreviation after the city name. Click OK to finish and the map will be redrawn, centered on the area you indicated.



The map shows color themes projecting the number of households per square mile in the year 2007.

# **Viewing All Six Maps**

When you have opened all six of the maps, one map will cascade down from another and you can see the full portion of only the front map.

- 3. To see all maps at once, **select Window, Tile,** from the Main Menu. The maps will arrange themselves side by side in a 3" x 2" grid.
- 4. Click on File, Close All, from the Main Menu to close all open maps.

# **Wrapping Up**

You have just learned the Map Library essentials: how to access, browse, and compare maps. You now should have an idea of the kinds of maps provided in the Map Library and how different map themes are used to present information. We recommend browsing the Map Library to identify other maps and map themes that may be especially relevant to your work.

# Introduction to Exercise 3: Layering Information on Your Neighborhood Map

Every map file is simply a collection of "layers" of different kinds of information about any location. Mastering the layers concept is essential to getting the most out of your maps.

Each layer typically shows just one type of data, such as streets or HUD Projects. There are three types of map layers: **areas, lines, and points** (for example, state, highways, and points of interest respectively).

Multiple layers are superimposed in a map like an overhead transparency. For example, counties could be the bottom layer, streets could be the next, then highways, and finally points of interest on top, all of which would appear onscreen as a single map with a variety of information. Like transparencies, layers in a map file can be rearranged, added or dropped, renamed, or hidden.

Each layer has graphical attributes that you can change to meet your communication goals: (1) a *theme*, such as colored areas, scaled symbols, or pie charts; (2) *labels*, such as highway names or chart labels; and (3) *styles*, such as border width or fill color.

# What You Will Learn in Exercise 3

In this exercise you will learn:

- How to use map layers to organize and display information on your map and use the Map Layers tool to make changes to the layers.
- How to add labels and change the graphic style of map layers by setting the Working Layer and using the tools in the Main Toolbar.
- How to save the changes you make to a map.

# Organizing Layers With the Map Layers Tools

# Steps

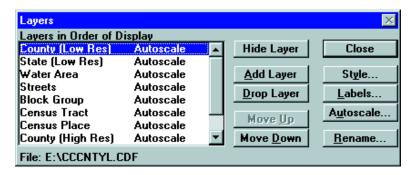
- 1. Click on the Map Library button in the HUD toolbox, or choose HUD, Map Library, from the Main Menu. Select the following and click OK:
  - Location: My Neighborhood
  - Category: General Purpose Maps
  - Map: Census Boundaries



The software will draw a map that contains layers of information associated with census boundaries, and layers, such as Streets, to orient the user. The software will also create a legend that lists the layers displayed on the map. You can see Water Area, Streets, Block Group, Census Tract, Census Place, County (High Res), and Highway listed in the legend. These are not the only layers associated with the map. These are the layers that are currently visible. You need to view the Map Layers dialog box to list all of the layers associated with the map.

# **Map Layers Dialog Box**

2. Click on the Map Layers button or choose Map, Layers, from the Main Menu. The Layers dialog box will appear:



This is the Map Layers dialog box. On the left it lists all of the layers on the map. The working layer, as shown above, is highlighted in blue.

The working layer is a very important concept in the software. Any change you make to the map is done through the working layer. It is the active layer, which means that any tool you use will operate on that layer.

Below the list of layers, you will see "File:" followed by the file name of the working layer. This indicates the file from which C2020 is accessing that

# Tip

When the software lists the layers, note that the bottom layer will be the most visible since, like a transparency, it was placed last on the map. As a rule of thumb, area layers should be positioned under line layers, and line layers should be under point layers, so that one layer doesn't obscure the layers beneath.

layer's information. Each layer is stored on its own geographic file. You can think of the map file as a set of directions for the software, telling it where to find the geographic files and how to display them on the map.

3. **Click on Streets** from the list of layers.

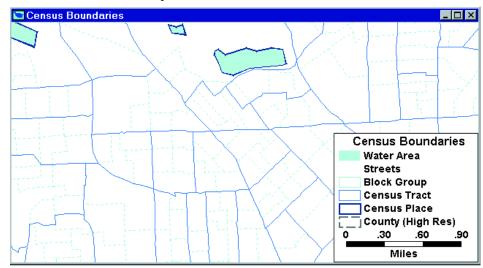
Streets is now your working layer. Below the list of layers, the file path will now read "File: D:\CCSTREET.CDF" (where D:\ is the drive where your geographic files are stored). This is the geographic file on which the street data are stored. Click on Close.

# Adding and Removing Layers of Information From a Map

When creating a map, you first must decide on the information you would like to present on the map. Instead of starting with a blank screen and individually adding each layer of information you need, you can choose a map from the Map Library that already contains layers you want. For example, the census boundaries map you opened contained the census-related layers and some additional layers, such as streets and highways, to orient you. However, not every combination of layers is available through the Map Library. The software provides three tools in the Layers dialog box—Hide Layer, Drop Layer, and Add Layer—to help change the combination of layers by adding and removing layers of information from the map.

The Hide Layer and Drop Layer buttons have virtually the same effect on a map: they both remove information from the map. If you hide a layer, it will no longer be visible on the map, but it will still be listed in the Layers dialog box. If you drop a layer, it will no longer be visible on the map and it will be removed from the Layers dialog box. The Hide Layer button is useful for temporarily removing information that you will eventually want to restore. The Drop Layer button is useful for removing information completely.

4. Scroll down the list of layers and select the Highway layer by clicking on it. Click on the Hide Layer button and click on Close to return to the map.



# Tip

Users with slower computers can speed up their mapmaking by hiding unnecessary layers.

You will see the Highway layer is no longer visible. You will also see the layer is absent from the legend.

5. Click on the Map Layers tool or select Map, Layers, from the Main Menu to return to the Layers dialog box.

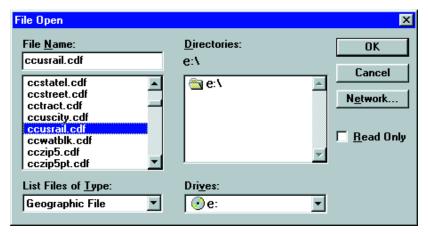
Look at the Highway layer in the list at the left of the dialog box. You will notice the layer is marked "Hidden." If you highlight the Highway layer, you will also notice that the Hide Layer button now reads "Show Layer." If you want to restore the highways to the map, all you need to do is click on the Show Layer button. Instead, follow the next step to remove the Highway layer completely.

6. Make sure Highway is still selected, and click on the Drop Layer button.

You will now notice that the Highway layer is removed from the list of layers. If you wanted to restore the highways to the map now, you would need to use the Add Layer tool and locate that geographic file on your computer.

You can use the Add Layer button when you want to add information to your map that is not already there. Remember that information is grouped together on different layers. For instance, all the counties are on one layer and all the streets are on another. This means that, to add information to your map, you need to add a layer.

7. Click on the Add Layers button. When you click on the Add Layers button, C2020 brings up the File Open dialog box. That's because each layer is stored on its own geographic file. When you open the geographic file, it is added to the map. Again, a map is simply a collection of map features that are stored on map layers.



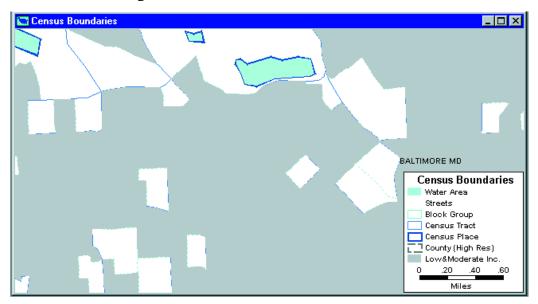
8. In the File Open dialog box, select the drive where the software's geographic files are stored (in most cases this will be the CD-ROM). Scroll through the list of geographic files and select lowmod.cdf. Click OK. The software will return to the Layers dialog box. Click on Close. You have just added the Low&Moderate Inc. layer to your map.

#### **FYI**

At the bottom of the LAYERS dialog box, you'll see "file:" followed by the filename of the working layer. This indicates the file from which C2020 is accessing that layer's information. Each layer is stored on its own geographic file. Think of a map file as a set of directions for the software. telling it where to find the geographic files and how to display them on a map.

#### 9. Click on the Map Layers tool. Scroll to the bottom of the list of layers.

When you add a layer to a map, it is placed at the bottom of the list. You'll see that Low&Moderate Inc. now appears last. At the very bottom of this dialog box, you will also see the name of the file that you added to access that layer's information. **Click on Close** in the Layers dialog box to return to the map and see the changes.



Look closely at the Low&Moderate Inc. layer depicted on your map. You will notice that you cannot see any of the other layers, such as Streets, where there is a Low&Moderate Inc. area. This is due to the order of display of the layers, which is the subject of the next section.

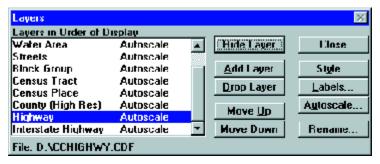
# Layers in Order of Display

10. Click on the Map Layers button or select Map, Layers, from the Main Menu to return to the Layers dialog box.

In the Layers dialog box, the layers are listed in order of display. When C2020 draws the map, it will start at the top of this list and draw the map layer by layer in the order that they are listed. On this map, C2020 will first draw the County (Low Res) layer. When finished drawing the counties, it will draw the State (Low Res) layer on top of the first layer. The software will continue down the list, drawing each layer over the previous one, until it finishes drawing the last layer listed. On this map, the last layer listed is Low&Moderate Inc. When it was drawn, it covered the previous layers.

To prevent a layer from covering another, place area layers at the top of the list from largest to smallest (for example, State before County), then line layers,

and finally point layers. This way no points or lines will be covered by areas that are assigned fill styles. Next you will learn how to change the order of display by moving the Low&Moderate Inc. layer to the top of the list with the Move Up button.



# **Changing the Order of Display**

You use the Move Up and Move Down buttons to change the order of display.

11. Click on the Low&Moderate Inc. layer in the list to select it (you may have to scroll to the bottom of the list to find it). Click on the Move Up button until the Low&Moderate Inc. layer is listed first. Click on the Close button.

The Low&Moderate Inc. layer is now drawn first with the line and point layers drawn over it. This is an improvement, but there are changes that would make it even better. Look at the layer name Low&Moderate Inc. in the legend. This name does not effectively communicate the information displayed on the map. The next section will explain how to rename a layer to alter the appearance of your legend.

# Renaming a Layer

- 12. Click on the Map Layers tool or Select Map, Layers, from the Main Menu to return to the Layers dialog box.
- 13. Select Low&Moderate Inc. from the list of layers, and click on the Rename button. A simple dialog box appears, listing the Old Name and providing a field for entering a new name. Click on the field next to New Name and delete the text provided. Now type: "Low and Moderate Income Areas" and click OK. Note that layer names can be quite long. You will see the change made in the list of layers. Click on Close to see the changes made to your map legend.

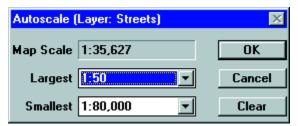
(Note: The legend is by default located in the lower right hand corner of your map. If you don't see it, click on the Show/Hide Legend tool [1], located on the Main Toolbar. This serves as an on/off switch for the legend. If the changes you have made do not appear in the legend, click on the Show/Hide Legend tool twice to update your legend.)

# **Autoscaling Layers**

14. Click on the Map Layers tool or select Map, Layers, from the Main Menu to return to the Layers dialog box.

You may have noticed more layers are listed in this dialog box than are drawn on the map. This is due to the Autoscale feature. Think of it more as an "autohide" tool. That's because the software automatically hides layers of information if they do not make sense at that particular map scale. For example, you would not want to see city streets on a map of your State. The lines representing the streets would be so close together, you would not be able to distinguish them. To save you the trouble of using the Hide Layer tool every time you change scales, C2020 allows you to use Autoscale to automatically perform this function.

15. **Select the Streets layer** from the list of layers at left in the Layers dialog box. **Click on the Autoscale button** to bring up the Autoscale dialog box.



This box indicates the current map scale and the largest and smallest map scales at which the software will draw the streets layer. If you want a layer to appear, regardless of the scale you are using, you have to clear the settings in the Autoscale dialog box by clicking on Clear. On the other hand, if you simply want to adjust the settings, you can select a new range from the two dropdown field boxes. Most of the default settings are reasonable.

16. **Click on the Clear button** and then **click OK.** Back in the Layers dialog box, you will see Autoscale is no longer listed beside the Streets layer. This means the streets will be drawn on your map regardless of the map scale. Click on Close to return to your map.

# Other Available Buttons in the Map Layers Window

The Layers dialog box includes the Style and Labels buttons, which enable you to change layer attributes such as size, color, and labeling. You will change the styles and labels of layers later in this exercise using another technique.

Close the Layers window.

# Using the Working Layer From the Main Toolbar

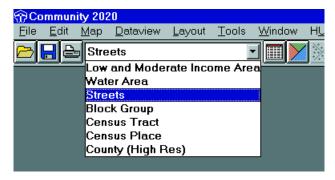
You have made several changes to the map using the Map Layers dialog box. In each case you first selected the layer you wanted to change and made it the working layer. You then used the appropriate tool to change that layer. You don't need to open the Map Layers dialog box every time you want to change your map. You can select the working layer from the Main Toolbar and use any of the tools available on the Main Toolbar or the Maptitude Toolbox. In the following sections, you will use the Main Toolbar to select the appropriate working layer and then use the Automatic Labels tool and the Style tool to change that layer.



# Styling a Layer

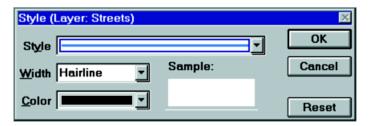
Even though the streets are now drawn on top of the Low and Moderate Income Areas, they are still difficult to see because both layers are presented in similar colors. You can use the **Style tool** to change the graphic style of the Streets layer. We will first make Streets the working layer, and then change the style to a darker color.

17. Click on the dropdown arrow on the right side of the Working Layer box, located in the Main Toolbar. Select Streets.



Streets is now the working layer. All of the tools on the screen will now work on the Streets layer. If you want to make a change to a different layer, you first have to change the working layer.

18. Click on the Style tool located in the Main Toolbar. Make the selections indicated below and click OK.

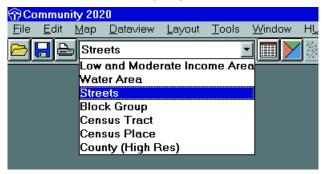


The Streets layer now stands out from the Low and Moderate Income Areas. Now that you can see the streets more clearly, you may want to label them to improve your sense of orientation.

# Labeling a Layer

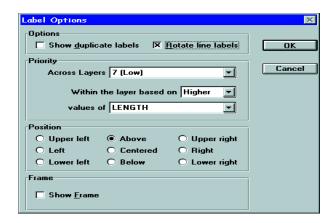
The ability to label a map's features greatly enhances the map's usefulness. C2020 provides two tools to label map features: **Automatic Labels** and **Manual Labels** The software also provides you with a variety of ways to label the map features. Each map layer is tied to its own database containing attribute data. You can label the map's features with any of the fields from the database. In this case you will use the Name field from the Streets database to label the streets.

19. Make sure Streets is the working layer.



Remember, to use the tools from the Main Toolbar or the Maptitude Toolbox, you have to first select the correct working layer. Click on the Automatic Labels tool . Make the selections indicated below and click on Options.





20. Make the selection indicated above and **Click OK** to return to the Labels dialog box. **Click OK** once more to return to your map and see the changes you have made.

You can also use the Manual Labels tool located in the Maptitude Toolbox if you want to label only selected map features rather than all of the features on a layer.

- 21. Select Block Group from the Working Layer section of the Main Toolbar.
- 22. Click on the Manual Labels tool located in the Maptitude Toolbox to activate it.
- 23. Click once on a Block Group you would like to label. The Manual Labels dialog box will appear. Select a field, such as Population, to label your Block Group. Change the style of the label to your liking and click OK.

You need to set the manual label settings only the first time you use manual labels on that layer. If you click on another Block Group, the software will apply the same style you set the first time. To change the manual label settings, **click on the Automatic Labels tool**, and then click on the Manual button in the Automatic Labels dialog box.

Once a manual label is placed on the map, it becomes freehand text. You can edit freehand text with the **Pointer tool**. This option is covered in depth in chapter 2, exercise 4.

# Saving the Changes to Your Map

Since Map Library map files, such as the Census Boundaries map that you opened, cannot be deleted or changed, you need to save the changes you have made as a new map.

24. **Select File, Save, from the Main Menu. Give your map a name** that is no longer than eight characters and does not include spaces or asterisks, for example NHCensus.



25. **Select File, Close All,** to close any open map windows.

# Wrapping Up

In this exercise you learned how C2020 uses layers to organize and display data on maps. You also learned how to change a map with the tools available in the Map Layers dialog box and with the Automatic Labels tool and Style tool available in the Main Toolbar.

# Introduction to Exercise 4: Enhancing Your Map

In the previous exercises, you learned not only how to show and hide different layers but also how to add or drop them from your map. Adding text, symbols, and compasses can make your map more meaningful.

#### What You Will Learn in Exercise 4

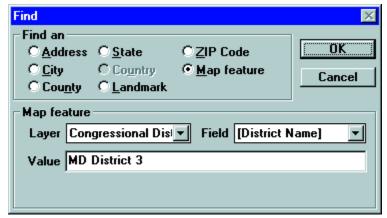
Exercise 4 will show you:

- How to enhance a map with Freehand Text.
- How to enhance a map by adding a North Arrow (compass).
- How to enhance a map by adding Freehand Symbols.
- How to control each of the above enhancements with the Pointer tool.

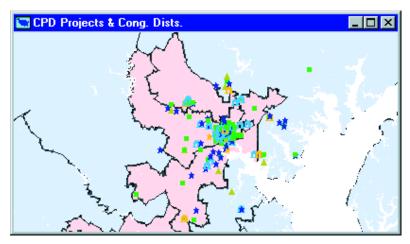
# Opening a Map

# Steps

- 1. You will now open a map from the Map Library using Other Location as the marker to open a map of Maryland's third congressional district. Later you will add text, symbols, and a compass. Click on the Map Library tool and make the following selections:
  - Location: Other Location
  - Category: Community Development Maps
  - Map: Projects & Congressional Districts
  - Year: 1997
- 2. Click on the Map Feature button in the Find dialog box and select Congressional District as the Layer and District Name as the Field; then type "MD District 3" as the Value. All of this is illustrated below:



3. **Click OK.** A map centered on your chosen congressional district will appear, as shown below. Hide the map legend.



# **Adding Freehand Text**

- 4. Click on the Freehand Text button T. Decide where you would like text to appear on your map, perhaps in the northwest corner. Next, click and drag a box appropriately sized to hold text in the map. Release the mouse button. A text box will appear with a blinking cursor. Type "Maryland Congressional Districts" in the box and do not worry if the text appears too large for the box. Press Enter on your keyboard.
- 5. The text should appear on your map, although the text may be so large that part of it is no longer on the map. If this is the case, or if you would like to make a change to the size, color, or font of your text, click on the Pointer tool . Next double-click anywhere on the text. A menu will appear and give you options for altering the text. Make any changes to these attributes, then click OK to see the revised text appear on your map.
- 6. If you wish to move the text elsewhere on the map, click once on the text while the Pointer tool is still active. Handles will appear surrounding the text to indicate that the text is active. Next click and drag the text to any other location on the map. If you wish to delete the text, click once on it to make it active using the Pointer tool. When the handles appear around the text, press the Delete key on your keyboard.

# Adding a North Arrow

7. Click on the North Arrow tool and pick an appropriate place on your map for your North Arrow. Click and drag a box appropriately sized to contain a North Arrow. Next release the mouse and, from the menu that appears, choose a style and color for the Arrow. Click OK. The North Arrow should appear on the map in the size, style, and color you chose.

# Tip

Do you find yourself resetting the legend position each time you open the same map? Here are some legend preferences you can set:

• To move the legend out of the map window, or set other parameters, select the Pointer tool on the Main Toolbox, double-click on the legend, and select Separate Window from the pulldown menu in the Legend Settings dialog box.

CPD Projects & Cong. Dists.

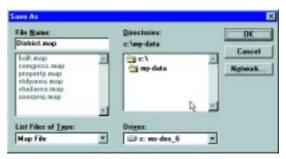
Maryland Congressional Districts

Your map should look similar to the one shown below.

If you wish to change the size or color of the North Arrow, or if you wish to move or delete it, you can do so using the Pointer tool in the same manner in which you changed, moved, and deleted the text.

# **Adding Freehand Symbols**

- 8. To add a symbol to the map, click on the Freehand Symbols tool . Click once on the map where you would like a symbol to be located. The Freehand Symbol Style dialog box will appear. Make your selection from the lists of fonts, icons, colors, and sizes, then click OK. C2020 will redraw your map, including the symbol. If you wish to change the size or color of the symbol you just added, or if you wish to move or delete it, you can do so using the Pointer tool in the same manner in which you changed, moved, and deleted the text and North Arrow.
- 9. To save this map, Select File, Save As, from the Main Menu. The Save As dialog box appears. Choose Map File as the file type in the lower left corner, type "District.map" as the file name in the top left, and select the subdirectory c:\my-data. To select this subdirectory, you may need to double-click on the folder icon next to the letter "c" in the directories window, then scroll through the list of files and then double-click again on the "my-data" subdirectory to open it. Your window should look like the illustration below. Click OK.



# **Chapter 2 Summary Questions**

- 1. What are your Markers used for?
  - A) Markers allow you to navigate quickly to different scales and locations in a map view.
  - B) Markers allow you to draw and add new features to a map.
  - C) Markers allow you to label places and text on your map.
  - D) All of the above.
- 2. Which tool can you use to move the map around within the map window?
  - A) The Pointer tool.
  - B) The Pan tool.
  - C) The Picture tool.
  - D) All of the above.
- 3. What maps are not available in the HUD Map Library?
  - A) Color theme maps of population.
  - B) Chart theme maps of ethnicity.
  - C) Dot density theme maps of grocery stores.
  - D) All of the above.
- 4. What changes can you make to a layer of the map?
  - A) You can add or remove labels from a layer.
  - B) You can change the color and style of a layer.
  - C) You can hide the layer or remove it completely.
  - D) All of the above.
- 5. Which tool can you use to provide or change labels for all items within a layer?
  - A) The Map Library tool.
  - B) The Manual Label tool.
  - C) The Automatic Label tool.
  - D) The Map Layers tool.

- 6. Before attempting to modify a map layer, you must make sure it is which layer?
  - A) The Cake layer.
  - B) The Active layer.
  - C) The Working layer.
  - D) The HUD layer.
- 7. True or False: Every map layer is an electronic file that contains geographic point, line, or area data.
- 8. Which tool do you use to manipulate the Freehand items you have added to your map?
  - A) The Info tool.
  - B) The Pan tool.
  - C) The Pointer tool.
  - D) None of the above.

Answers to these questions can be found at the end of the manual in Appendix B.